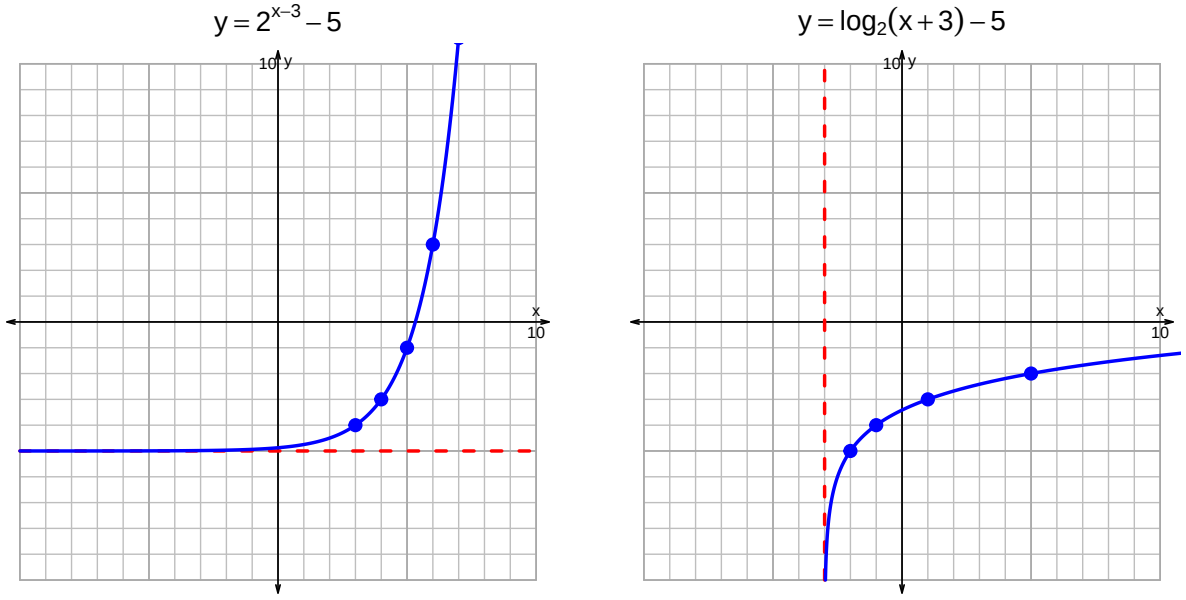
Name: Date:

## S18QUIZ: EXP LOG (SLTN v208)

1. Graph $y = 2^{x-3} - 5$ and $y = \log_2(x+3) - 5$ on the grids below. Also, draw any asymptotes with dotted lines.




2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$23 = \left(\frac{3}{5}\right) \cdot 2^{-4t/7}$$

Divide both sides by $\frac{3}{5}$.

$$\frac{23 \cdot 5}{3} = 2^{-4t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{23 \cdot 5}{3}\right) = \frac{-4t}{7}$$

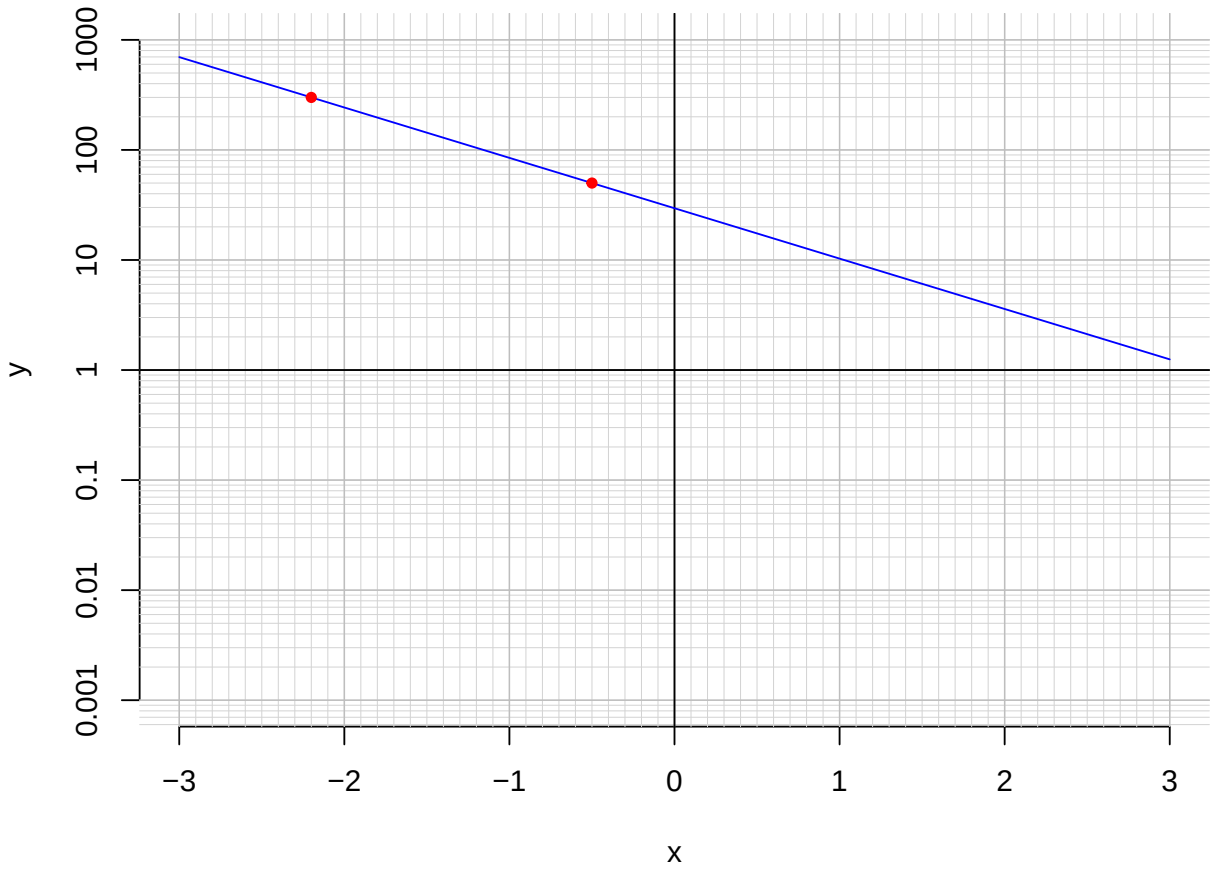
Divide both sides by $\frac{-4}{7}$.

$$\frac{-7}{4} \cdot \log_2\left(\frac{23 \cdot 5}{3}\right) = t$$

Switch sides.

$$t = \frac{-7}{4} \cdot \log_2\left(\frac{23 \cdot 5}{3}\right)$$

3. An exponential function $f(x) = 29.5 \cdot e^{-1.05x}$ is graphed below on a semi-log plot.




a. Using the plot above, evaluate $f(-0.5)$.

$$f(-0.5) = 50$$

b. Express $f^{-1}(x)$, the inverse of $f$.

$$f^{-1}(x) = \frac{-1}{1.05} \cdot \ln\left(\frac{x}{29.5}\right)$$

c. Using the plot above, evaluate $f^{-1}(300)$.

$$f^{-1}(300) = -2.2$$